

EXPERIENCE WITH COASTAL AND MARINE PROTECTED AREA PLANNING AND MANAGEMENT IN THE PHILIPPINES

by

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1. Perspective on coastal management in the Philippines

Coastal management has been practiced in the Philippines over the last two decades to try to stem the increasing tide of destruction to coastal habitats and the decline of fisheries. Unfortunately, after 20 years of practice, coastal resources continue to decline and deteriorate at alarming rates. While numerous experiments in coastal management have been conducted, few have been evaluated with sufficient scientific rigor in order to distinguish successful from unsuccessful outcomes. This paper provides an overview of selected experiences and two case studies in coastal management that involve marine protected areas. Important lessons and approaches that can be used for marine protected area management in the context of sustainable coastal management are highlighted.

In recent years, two major forces have influenced the development of coastal management in the Philippines (Courtney and White 2000). The first is a series of donor-assisted non-government organization (NGO) and government projects that have resulted in a number of experiments in coastal resource management (CRM), all of which have established marine protected areas of various kinds. Such projects, working with coastal communities, have focused on near-shore fisheries and coastal habitat management (Ferrer *et al.* 1996; White and Lopez 1991; Christie and White 1997). The second major influence affecting the evolution of coastal management in the Philippines is the devolution of authority from central to local governments (municipal, city, and provincial). CRM has been supported and nurtured by a variety of institutions, including government, non-government organizations (NGOs), people's organizations, research institutions and by multilateral and bilateral donor organizations, employing different strategies and approaches.

The issues of most concern are declining fisheries, mangrove forest and coral reef destruction, and poverty among coastal communities. Overall fisheries-related food production in the Philippines has been static for the last 10 years despite increased number and tonnage of commercial vessels, increased number of municipal fishers and increased coverage of fishponds (BFAR, 1997; Courtney *et al.* 1999). Municipal fish catch has been on a steady decline, accelerated by the use of illegal fishing practices and over-fishing.

In short, the Philippine's 18,000-kilometer coastline is under siege from a variety of activities and impacts, which are eroding the natural resource base and the area's potential for future

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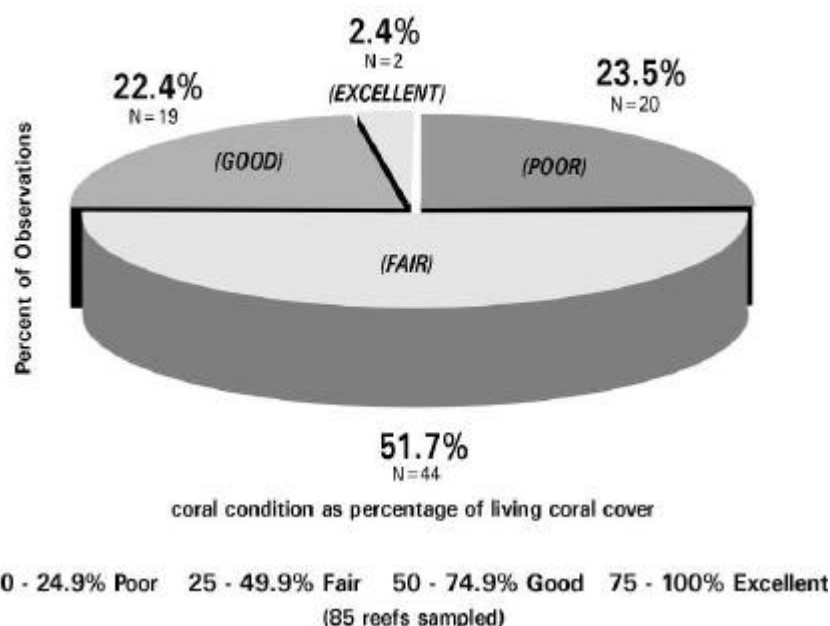
sustainable use. The lack of control of almost all coastal development activities is symptomatic and indicative of what is to come if much stronger and more effective institutions and procedures for integrated coastal management (ICM) are not soon put into place. The challenges of coastal management are now of such magnitude that Philippine institutions are responding with more concern and integrated approaches than in the past. Many lessons learned in coastal management involving marine protected areas can now be shared from the Philippine experience to accelerate the adoption and sustainability of best practices in coastal management. This paper provides an overview of selected Philippine experiences moving towards the sustainable use of coastal resources. The current biophysical, social, and legal setting for coastal and marine protected area management is described. Experience and lessons learned are drawn from broad programmatic experiences and supported by two case studies from San Salvador Island, Zambales and Tubbataha Reef National Marine Park, Sulu Sea. These cases provide the basis for defining basic ingredients for successful local and national marine protected area management in the context of broader coastal management programs in the Philippines.

2. Status of coastal ecosystems and management issues

An overriding issue for the management of Philippine coastal resources is the decline in the productivity and integrity of coastal ecosystems supplying essential food, livelihood and other forms of income to coastal residents. It is currently estimated that coral reefs alone contribute at least US\$ 1.35 billion annually to the economy (White and Cruz-Trinidad 1998). This could be significantly enhanced with improved management and protection for this ecosystem and its resources.

The Philippines is endowed with approximately 27,000 square kilometers of coral reefs but only about 5 percent are still in excellent condition (Figure 1)(Gomez *et al.* 1994; Chou *et al.*

Figure 1. Status of Philippine coral reefs at 14 localities (Gomez *et al.* 1994).

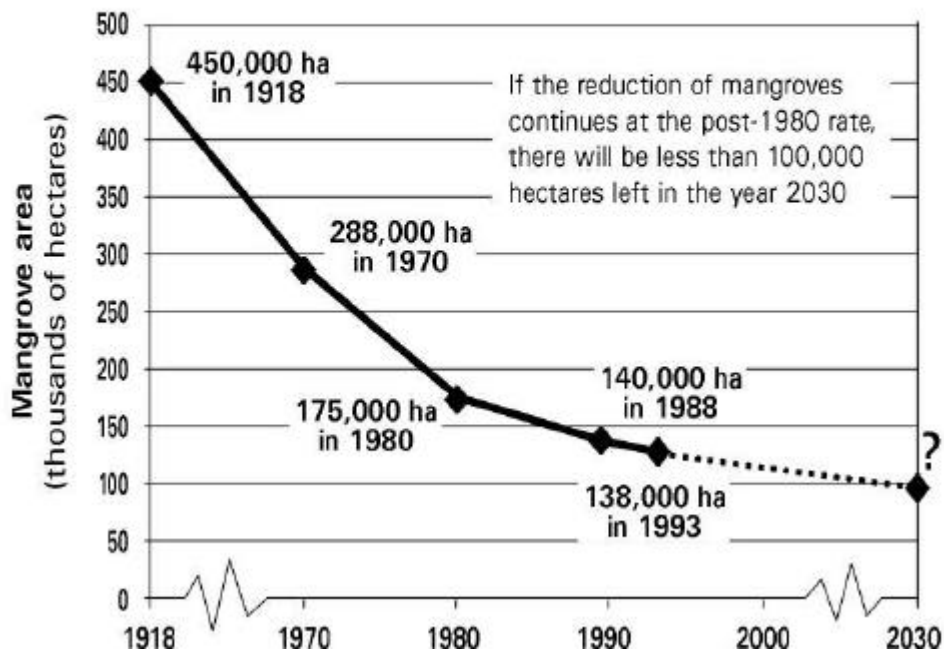


1994). The numerous factors contributing to this decline are intertwined and not easily isolated for management purposes. Nevertheless, the primary issues and conflicts of interest affecting coral reefs, often used as symbols for the broader coastal management issues in the country, are as follows: various kinds of pollution and loss of coastal habitats stemming from upland and coastal development, illegal and destructive fishing practices, over-fishing due to an open-access fishery regime throughout the country, increasing poverty among coastal dwellers, a rapidly growing population, and variable political will to squarely address the problems. An important variable that drives many of the issues is a lack of economic alternatives that would make coastal dwellers less dependent on their natural resource base.

Seagrass beds are another important coastal ecosystem in the country's diverse coastal area. The Philippines has the second highest species richness in the world after Western Australia (Fortes 1994). Seagrass beds are in better condition than coral reefs with only about 20 percent of studied areas in poor condition (Fortes 1994). Nevertheless, about 20 to 30 percent of the original seagrass beds have been lost to dredging activities, pollution from domestic and commercial sources, and sedimentation.

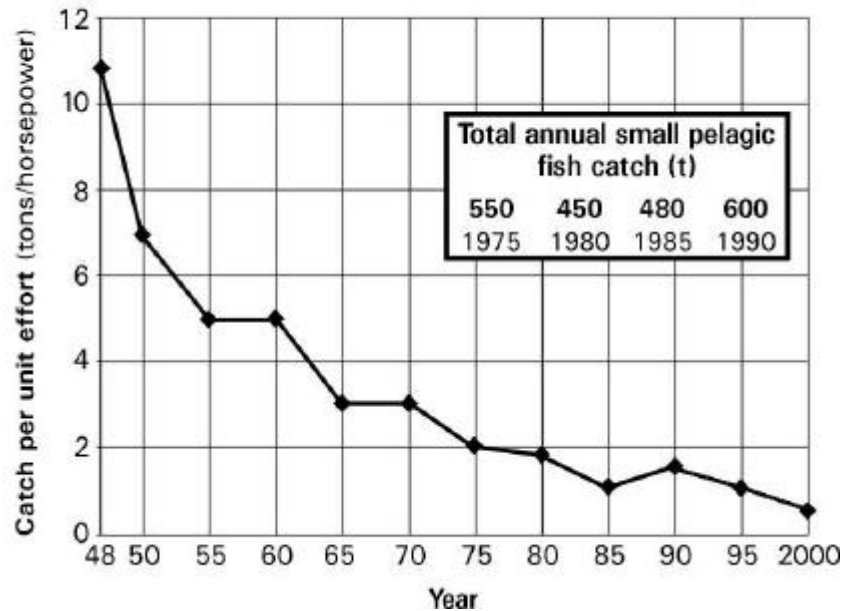
Mangrove forests are still declining. The original mangrove forest cover of about 450,000 hectares in 1920 is now diminished to about 120,000 hectares (Figure 2) (Bina et al. 1979; (DENR 1988 and 1995; World Bank 1989). This decline is mostly a result of clearing for shrimp farming operations, other forms of aquaculture, habitat conversion for urban development and other uses, and lack of ability of key national agencies to implement essential new policies (De Leon and White 1997; Calumpong 1994).

Figure 2. Status of mangroves in the Philippines (White and Cruz-Trinidad 1998).



Fisheries in general are being over-exploited and improperly fished with the result that fish catches are declining. In addition, catch composition is changing towards lower value species which means that economic revenues are declining (Bernacsek 1996). The culprits are overcapacity in the industry and lack of management as shown in Figure 3 depicting a decline in catch per unit effort.

Figure 3. Catch per unit effort in Philippine small pelagic fisheries (BFAR 1997).



Water quality is declining at alarming rates all around the country as increasing amounts of waste end up in nearshore waters. This is damaging coastal ecosystems, fisheries and other uses such as recreation and tourism (White and Cruz-Trinidad 1998). The difficulty of changing this trend is not being squarely addressed because of lack of cost-effective methods for treating and minimizing waste.

Shoreline development is poorly planned and controlled in many areas with the result that dense aggregations of people and structures are often sited illegally in foreshore beaches and land. Laws governing coastal environmental impact assessment and land use are generally not implemented. This unguided development is degrading the natural and economic benefits derived from coastal ecosystems and land areas.

Coastal resource issues arise from a broad range of stakeholders of which municipal fishers represent only one small sector. Lack of awareness of this simple fact has resulted in attributing serious coastal problems to a few illegal fishers when in reality a large portion of society is partly responsible for these problems. While the issues to be addressed by coastal management are serious, the opportunities are unfolding. The legal and policy framework for coastal management in the Philippines has been established with the passage of the 1991 Local Government Code and more recently, the 1998 Fisheries Code. Twenty years of coastal management initiatives in the Philippines has also established best practices and models for coastal resource management all of which include marine protected areas in

different forms. The challenge ahead is to mainstream knowledge and appreciation of the laws and widespread application of technologies to replicate and accelerate implementation of coastal management nationwide (Courtney *et al.* 2000).

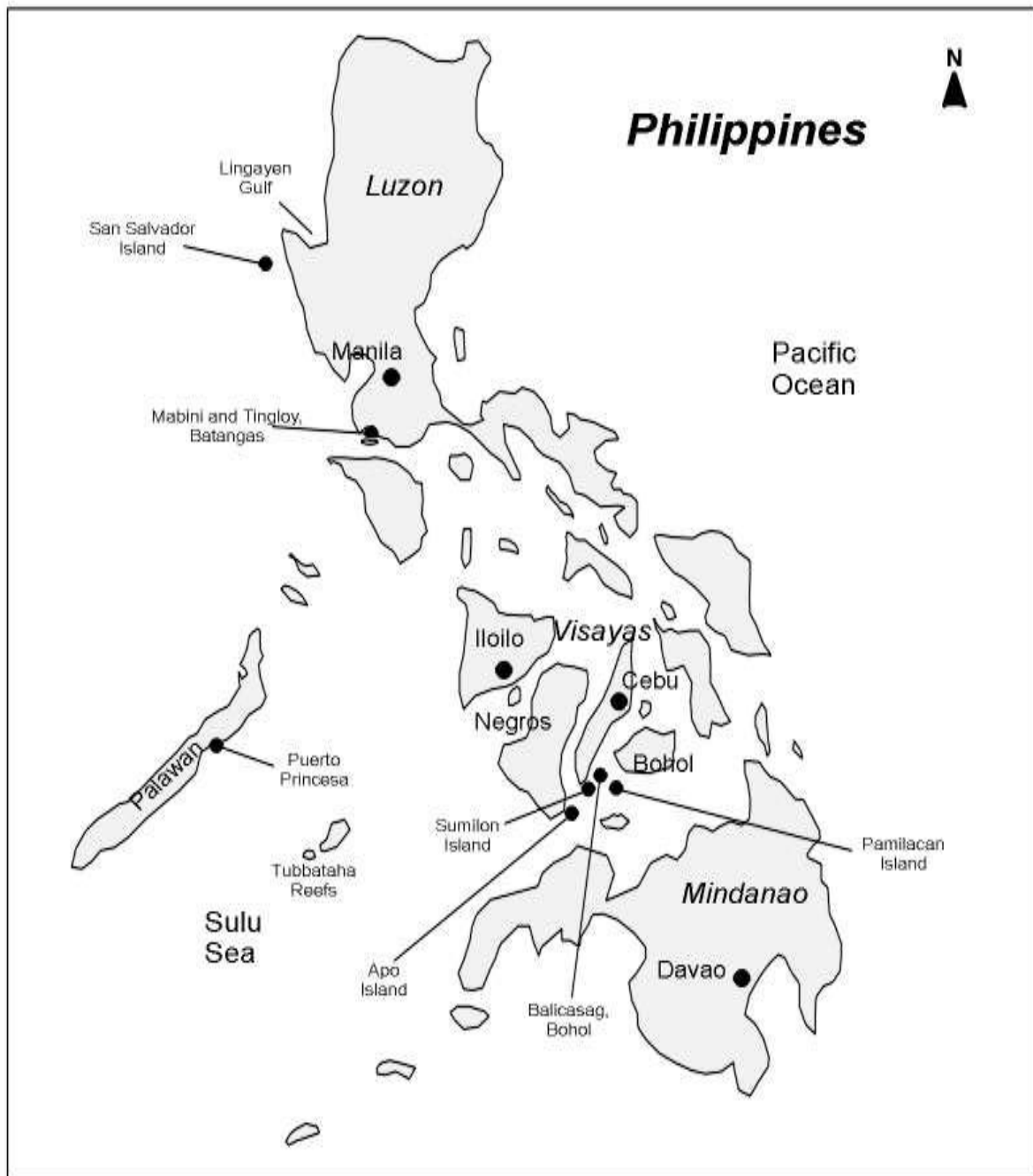
3. History of marine protected areas and coastal management initiatives

The term and concept “marine protected area” or MPA has recently proliferated in the Philippines. It refers collectively to areas in the marine region, whether coastal or offshore, set aside for management and conservation measures or to areas where some semblance of protection, whether legislated or not, is exercised. Before the term MPA became known, the common reference was to fish sanctuary, marine reserve, marine park, and a few others. These are still used within the context of local government and community-based projects but the use of “marine protected area” is now common at the national level to refer to any such marine or coastal protected area, often within the context of a broader coastal management regime or program.

The first so-called municipal marine park or fish sanctuary in the Philippines was established in 1974 on Sumilon Island, Cebu under the guidance of Silliman University and its marine laboratory. Sumilon Island fish sanctuary is often cited in the Philippines and even internationally as the reason why coral reef fish sanctuaries contribute to improved reef fisheries management (White 1987a). This initial experiment in reef management, that in fact stopped all fishing on a portion of the Sumilon Island reef for about 10 years, allowed researchers to collect substantial data on the effects of such management on the coral reef and its related fisheries (Alcala 1988). First, the coral reef substrate condition improved remarkably because all destructive fishing practices were halted. Living coral cover more than doubled to about 60 percent. Second, the fish abundance on the reef as measured in terms of individuals per 500 square meters more than tripled with the most significant increase among those fish targeted by fishermen. Finally, and most important, the yearly fish catch to fishers fishing on the Sumilon Island reef, but not in the sanctuary, increased from about 14 tons per square kilometer to almost 36 tons per square kilometer (Russ and Alcala 1996). This unprecedented fish catch and large measurable increase convinced scientists, reef managers and fishers alike that fish sanctuaries did indeed improve reef fisheries, and most important benefit the fishers dependent on the area (Alcala and Russ 1990; White and Savina 1987).

Between 1974 and the present many similar municipal marine fish sanctuaries or MPAs have been established in the Philippines following the lead of Sumilon Island. Several that are well managed and documented in terms of their benefits both for fisheries and tourism include Apo Island, Negros; Balicasag and Pamilacan Islands, Bohol; Mabini, Batangas; and San Salvador Island, Zambales, the case study described below (Figure 4). These examples have followed a general model as shown in Figure 5 whereby the portion of an island or mainland-based fringing coral reef is set aside in a “no-take” or “sanctuary” zone and where the area outside of this no-take zone is called a traditional fishing zone or in international terms, the buffer zone. Within the buffer zone activities are usually allowed that do not damage the coral reef in any way such as traditional fishing methods. Within the no-take or sanctuary zone, entry in the form of swimming and diving is normally permitted but without collection of any kind (White 1988a and b; 1989).

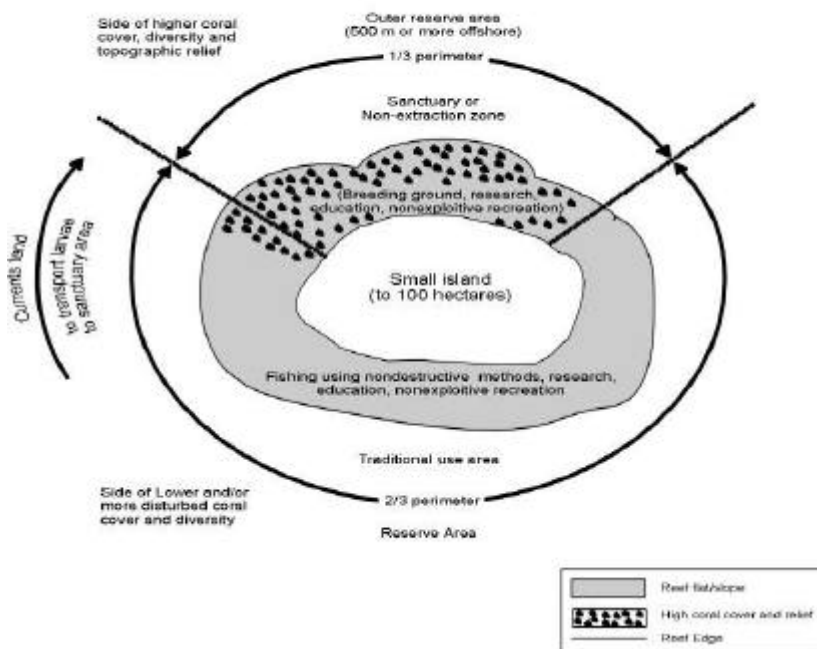
Figure 4. Philippines with location of marine reserve and sanctuary sites.



Recent studies have not only indicated the beneficial impacts of fish sanctuaries on fishery yields and protecting the coral reef but that people participating in such management efforts gain in a variety of ways (Katon *et al.* 1997; White *et al.* 1994). One salient characteristic of successful MPA projects is the strong involvement of communities and the local government in the planning and enforcement process. This involvement builds the confidence of people

to manage their own resources and encourages outcomes that are long lasting. Thus, success of MPAs in the Philippines hinges on two crucial actors: the (local and national) government and the stakeholder communities.

Figure 5. Sample marine reserve system with zones as applied on small islands with coral reefs in the Philippines (White 1988a).



In a survey of MPAs conducted by the national non-government organization, Haribon Foundation, approximately 439 MPAs of all kinds were reported. Although information on actual field management was limited, the study indicated that only 44 MPAs were fully enforced (Pajaro *et al.* 1999). Earlier, Baling (1995) provided an indicative list of 249 MPAs that also counts environmentally critical areas, marine recreation areas, and seashore parks as MPAs most of which existed in name only. The World Conservation Monitoring Center dataset records 12 MPAs in the Philippines covering about 45,800 hectares (Bryant *et al.* 1998). The substantial increase in number of MPAs reported in 1999--despite possible methodological differences in the estimate and identification of MPAs--may be attributed to the strong interests shown by the national government, NGOs, and funding institutions to promote MPAs as a means for coastal habitat and fisheries management in the 1990s. Although the total area covered by all these MPAs is not known, the 44 existing and enforced MPAs reported in Pajaro *et al.* (1999) cover about 26,500 hectares (265 km²) of mostly coral reef habitat. Thus, the cumulative impacts of the existing MPAs, assuming full implementation, would contribute significantly to the sustainability of the country's coastal ecosystems.

The growth of MPAs in the Philippines can also be attributed to the innovations of coastal resources management (CRM) proliferating in the country. The hallmark of CRM in the Philippines is the effort to make it more community-based, people-oriented and participatory.

Thus, on-going efforts are labeled as community-based coastal resources management, integrated coastal resources management or collaborative-management. In this flurry of activity, MPAs, through their successful precursors—the fish sanctuaries and marine reserves—became a centerpiece in the involvement of communities and other stakeholders. MPAs are known to provide various benefits as listed in Table 1.

Table 1. Real and potential on and off-site benefits derived from marine protected areas in the Philippines (adapted from Padilla and Rosales 1997)

- Improved fishery yields (commercial and small-scale)
 - Tourism revenues
 - Recreation
 - Scientific research and education
 - Biodiversity improvement
 - Gene resources and diversity
 - Species and ecosystem protection
 - Ecological processes support (larval dispersal)
 - Flood and erosion reduction
 - Spiritual, cultural and aesthetic values
 - Future values
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The success demonstrated by fish sanctuaries and marine reserves has encouraged the general acceptance of the approach. National legislation now promotes the use of this management measure for coastal habitats and fisheries. The National Integrated Protected Areas System (NIPAS) Law or RA 7586 and the Fisheries Code of 1998 both make provision for the implementation of MPAs through the means of marine reserves and fish sanctuaries. In addition, projects supported by multilateral and bilateral donors such as the World Bank, the Asian Development Bank, the United States Agency for International Development (USAID) and the European Union as well as various local and international non-government organizations have included MPAs as a priority mechanism to restore degraded coastal and marine ecosystems within coastal management programs. Several large and foreign-assisted programs that have had a major influence on the development of coastal management practices and specifically MPAs are described in Table 2.

Table 2. Donor-assisted and government programs that have provided a foundation for coastal management in the Philippines (after Courtney and White 2000)

The Central Visayas Regional Project (CVRP), supported by a World Bank loan, was a pilot project in community-based rural development operating from 1984 to 1992. One of its components was watershed management, including near-shore fisheries development in four provinces. Interventions included mangrove reforestation, coral reef protection and marine sanctuary establishment, artificial reef and fish-aggregating device installation, and mariculture. A major finding from a 1995 assessment of CVRP was that baseline information was insufficient to evaluate the results (SUML 1996; Calumpong 1996). A key lesson learned was that baseline information and periodic monitoring is essential.

The Marine Conservation and Development Program (MCDP) of Silliman University, supported by the United States Agency for International Development (USAID), operated from 1984 through 1986 on three small islands in the Central Visayas. This relatively small project generated important examples for community-based coral reef management that exemplified the potential sustainable use of coral reef fisheries and habitat (MCDP 1986). The lessons from these three islands attest to the effective role communities can play in sustaining management efforts in spite of changes in government personnel and policies.

The Lingayen Gulf Coastal Area Management Program (LGCAMP) operated from 1986 through 1992 as one of six CRM planning areas in Southeast Asia supported by USAID and the Association of Southeast Asian Nations (ASEAN) countries. This was the first attempt at ICM in the Philippines, and addressed one large gulf in northern Luzon composed of 2 provinces and 20 municipalities. The project first generated a comprehensive database for planning, which included reliable fisheries data to measure required fishing effort reduction needs since the most serious issue of the area was over-fishing (Chua and Scura 1992). The difficulty of implementing the recommendations on fishing effort forced the planning process to steer toward education, generation of political will and development of CRM plans at the municipal level. This program initiated an institutional arrangement to coordinate planning and implementation that, while not completely effective, is a model for the country (NEDA 1992). Key results included:

- Policy directives to reduce and eliminate commercial fishing within the gulf
- Improved law enforcement and reduced levels of illegal fishing
- A detailed integrated management plan for the municipal waters and coastal resources of Bolinao
- Guidelines for improved aquaculture development
- Mangrove reforestation projects
- The careful examination of proposed industrial development projects before they are implemented.

The Fisheries Sector Program (FSP), conducted from 1991 to 1997, was implemented by the Department of Agriculture (DA) with support from the Asian Development Bank. This large program attempted to generate and implement CRM plans in 12 bays known for their rich fisheries, management problems, and the growing poverty of coastal residents. The program tested the ability of the DA to incorporate community-based management as a mainstream approach to CRM. A primary strategy was to generate bay-wide CRM plans through the involvement of fishing communities by contracting NGOs to facilitate the planning and community organization processes. The results have raised awareness about the need for management, and in a few cases actually improved fishery management in the bays. A lesson was the importance of establishing a simple set of baseline information on which evaluation and management decisions could be based. The 12 bay-wide projects, together with national policy efforts helped:

- Establish 22 fish sanctuaries
- Organize more than 1,000 fisheries associations
- Conduct resource assessments to establish sustainable fish levels
- Redirect research and extension work toward CRM
- Enact municipal fishery ordinances in several municipalities
- Rehabilitate mangrove swamps in 6,000 has of degraded coastal forests
- Strengthen fishery law enforcement (DENR *et al.* 1997).

The Coastal Environment Program (CEP) of DENR was started in 1993 and is implemented by the regional offices of DENR, emphasizes community participation and focuses on national marine protected areas. The CEP is the only national government program to promote management of the entire coastal environment, including water quality and shoreline land use, and is not solely focused on fisheries management. The CEP has the potential to develop into a national coordinating and policy unit supporting ICM throughout the Philippines if it is supported and can develop effective links with the Bureau of Fisheries and Aquatic Resources.

Regional Programme for the Prevention and Management of Marine Pollution in the East Asian Seas (MPP-EAS), an ongoing project of the United Nations Development Programme (UNDP) initiated in 1994 and funded through the Global Environment Facility which is a cooperative venture among national governments, the UNDP, and the World Bank. The Philippines is one of 10 participating countries in Southeast Asia. MPP-EAS has focused on developing Batangas Bay as a model site for integrated coastal management working with national and local government and promoting private sector partnerships to solve environment problems.

The National Integrated Protected Area Project (NIPAP), a project of the DENR funded by the European Union initiated in 1995 with the overall objective is to help protect, conserve and manage natural habitats and biodiversity in eight selected protected areas in the Philippines, two of which are marine (El Nido Marine Reserve and Malampaya Sound, Palawan). NIPAP is expected to produce the following major outputs:

- Appropriately designed and legally established protected areas with rationalized, delineated and demarcated boundaries;
- Establishment of effective structures and mechanisms for the protection, management and administration of protected areas; and
- Increased public awareness on the need to protect ecosystems and biodiversity and increased involvement of resident communities in natural resources and sustainable management (NIPAP 1999).

The Coastal Resource Management Project (CRMP), a project of the DENR and funded by USAID was initiated in 1996 to provide technical assistance and training to local government units, coastal communities, national government agencies, and non-government organizations. A primary strategy is to work with local government to establish coastal management as a basic service with active involvement of coastal communities and co-management regimes with national government agencies, and other stakeholders. The CRMP has initiated by year 2000 improved coastal management in 29 municipalities covering about 700 km of coastline that constitute the 6 “learning areas” of the project. It is now proceeding to expand its area of influence, in collaboration with local governments, provinces, DENR, other donors and partners, to another 1500 km of coastline.

The Fisheries Resources Management Program (FRMP) supported by a large Asian Development Bank loan started operation in 1998 and will continue to 2003 or beyond. It is being implemented through the Department of Agriculture, Bureau of Fisheries and Aquatic Resources and represents the most significant effort by the government to improve coastal management in the country. This program is a continuation of the Fisheries Sector Program that addressed the need for CRM in 12 bays. Eleven of the 12 original bays will be continued and 6 new ones added to the field implementation. The focus of field implementation is empowering communities and local governments to manage their fisheries and other coastal resources. It is designed to build on past lessons of the FSP and other projects. One notable change is that coastal resource assessments will be done together with community participation to start the planning and implementation process. This innovation is patterned after the CRMP upon which the FRMP is depending for some training, education and other materials already created and available. The FRMP supports CRM as a basic service of local governments and is involved in furthering national policies for coastal management.

4. The legal and policy framework for marine protected area and coastal management

The legal and policy framework for the planning, establishing and managing of marine protected areas in the Philippines is found in the Local Government Code of 1991, the National Integrated Protected Areas System Act of 1992, and the Fisheries Code of 1998. Other laws that regulate certain activities or use of protected areas may also be applied depending on the need. At the local level, there are many municipal ordinances supporting MPA establishment. In the hierarchy of laws in the Philippines, the 1987 Constitution is the fundamental law of the land while treaties, international agreements, republic acts, presidential proclamations, presidential decrees and executive orders follow (DENR *et al.* 1997). Administrative orders issued by government agencies are the lowest in the hierarchy.

The evolution of coastal management legal support mechanisms in the Philippines has progressed from a predominately open access regime under national government to a more localized management framework (Courtney et al 2000) as shown in Figure 6. This

progression is reflected in the laws explained below and the institutional roles and responsibilities shown in Figure 7.

Figure 6. Evolution of coastal management mechanisms in the Philippines.

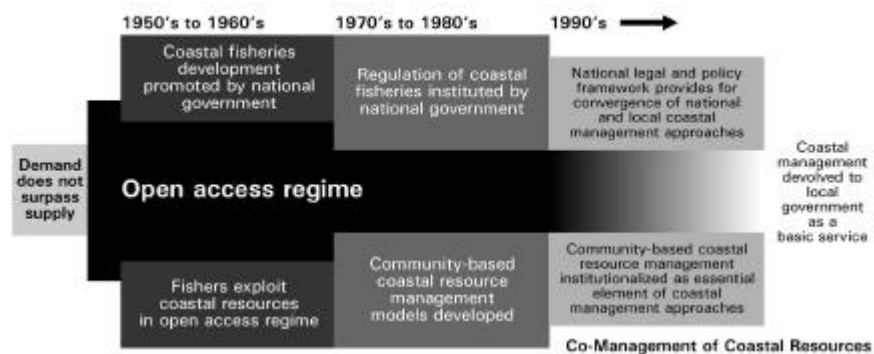
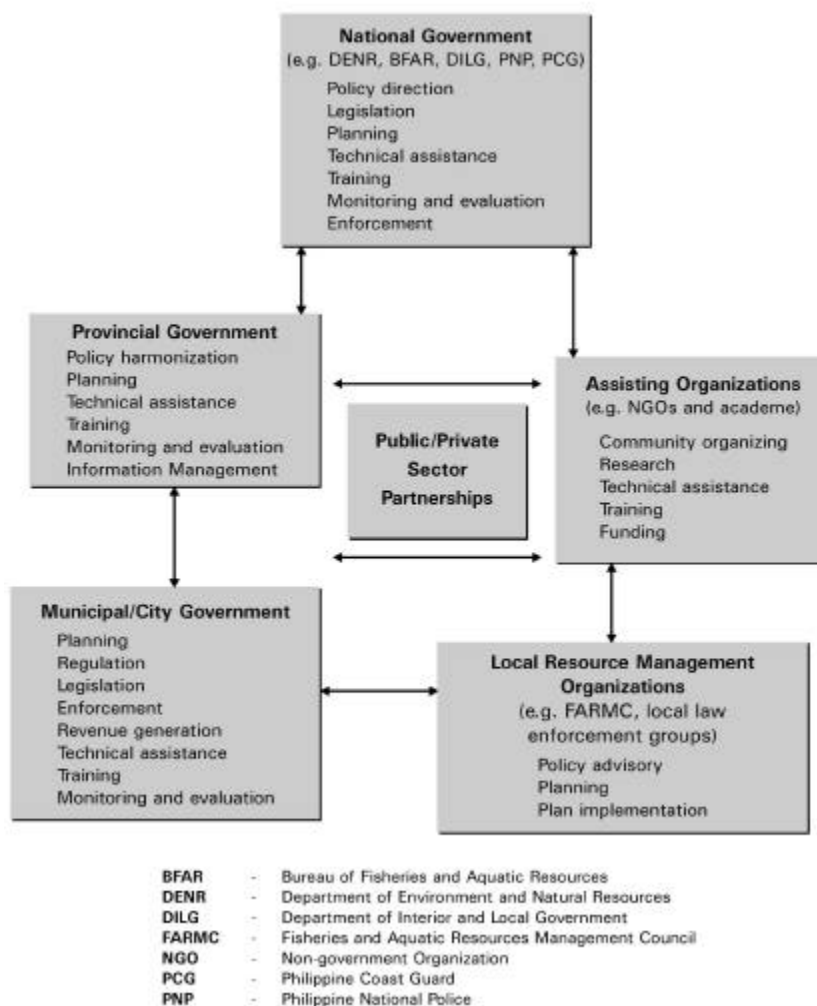


Figure 7. Key institution roles and responsibilities for coastal management in the Philippines.



National Integrated Protected Areas System (NIPAS) Act

The NIPAS Act (Republic Act 7586) is the primary legal framework that covers protected areas in the Philippines. Areas designated as protected areas are “outstanding remarkable areas and biologically important public lands that are habitats of rare and endangered species of plants and animals, biogeographic zones and related ecosystems, whether terrestrial, wetland or marine”. Other laws that cover certain uses, activities or restrictions in protected areas can also be invoked in managing protected areas such as the Fisheries Code, the Water Code and the Environmental Impact Statement law.

The NIPAS Act generally covers protected areas that are national in scope and are declared as such by congress as compared to the smaller municipal protected areas such as fish sanctuaries that are covered by municipal ordinances unless they are specifically part of a broad protected area system. The Act also specifically prohibits certain acts such as hunting or just mere possession of plants or animals, dumping of waste, squatting, and use of motorized equipment (Table 3). It also defines the scope of protected areas and how it will be established and managed. Among the steps needed to establish a protected area are a forest occupant survey, an ethnographic survey, a protected area resource profile and land use plan.

Public hearings, in particular, and community participation, in general, in protected area planning are considered essential to the effective management of each protected area. The law provides for public hearings when areas are being proposed for declaration. NIPAS also requires an overall planning and decision-making body for a protected area--the protected area management board (PAMB)--chaired by the Regional Executive Director of the Department of Environment and Natural Resources. This PAMB is composed of various stakeholders such as NGOs, people’s organizations, representative of tribal communities, and government departments. Further, NIPAS stipulates that certain activities not considered part of a protected area management plan is subject to environmental impact assessment to mitigate possible negative environmental impacts. The law also provides for the creation of an integrated protected areas fund used to finance NIPAS projects and to ensure that the protected area is sustained after the withdrawal of external funding. Special prosecutors are supposedly designated in the Act to prosecute violations of laws and regulations of protected areas. These are not yet active and thus the level of progress in implementation of the law using the NIPAS Act is very slow.

Table 3. Prohibited acts inside protected areas as provided for in the NIPAS Act

- a) Hunting, destroying, disturbing, or mere possession of any plants or animals or products derived therefrom without a permit from the Protected Area Management Board (PAMB);
- b) Dumping of any waste products detrimental to the protected area, or to the plants and animals or inhabitants therein;
- c) Use of any motorized equipment without a permit from the PAMB;

- d) Mutilating, defacing or destroying objects of natural beauty, or objects of interest to cultural communities (of scenic value);
 - e) Damaging and leaving roads and trails in a damaged condition;
 - f) Squatting, mineral locating, or otherwise occupying any land;
 - g) Constructing or maintaining any kind of structure, fence or enclosures, conducting any business enterprise without a permit;
 - h) Leaving in exposed or unsanitary conditions refuse or debris, or depositing in ground or in bodies of water; and
 - i) Altering, removing, destroying or defacing boundary marks or signs.
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For MPAs, the application of the provisions of the NIPAS act is inadequate as it has terrestrial bias and hence needs site-specific guidelines for proper implementation. The Act is only applicable if stakeholders seek resolution for issues and problems affecting protected areas that are national in scope. Municipal fish sanctuaries and reserves, currently the trend in fishery and reef management and conservation in the country, are more realistically and sufficiently protected by municipal ordinance (Luna 1997).

This national bias of NIPAS and the central role played by the DENR is not necessarily a major contributory factor to the success of MPAs in the Philippines. Being covered under a broad national policy framework is good in that it brings with it the resources of the government such as financial assistance and expertise. But the same framework can also lead to problems when community efforts to manage MPAs are stymied by bureaucratic processes and practices. As a matter of fact, most successful and effective MPAs are managed outside of NIPAS and DENR except for several special cases.

The Local Government Code (LGC) of 1991

The LGC (Republic Act 7160) provides for the decentralization of certain functions of the national government through a process of devolution. The LGC is intended to provide “a more responsive and accountable local government structure”⁴. Decentralization as envisioned in the Code proceeds from the national government to the local government units. The Code provides more powers, authority and responsibilities to local government units to effectively carry out their specified functions. These functions include assessment, planning, regulation, legislation, enforcement, revenue generation and monitoring of their environment and natural resources. However, coastal resource management is still largely a new mandate and local governments must increase their capacity and budget for delivery of this basic service (Courtney *et al.* 2000).

One factor contributing to the growth in numbers of municipal MPAs was the adoption of the LGC. The LGC gives extensive power to local governments to manage their coastal and marine resources out to 15 kilometers offshore. Municipal fish sanctuaries and marine reserves can be established solely through a municipal ordinance without national government approval. This has resulted in the establishment of many more fish and marine sanctuaries than other types of MPAs (Pajaro *et al.* 1999).

⁴ Local Government Code, Section 2, 1991

The establishment of marine protected areas at the municipal or barangay⁵ levels can be done by local government units (LGUs) without being hindered by lengthy processes that policies at the national level usually impose. For instance, fish sanctuaries and marine reserves can be established at the barangay or municipal levels as initiatives to conserve their coastal resources without being subjected to the NIPAS act unless they are considered national protected areas. In addition, fisheries management within municipal waters (out to 15 km offshore) such as imposing fishery license fees, enforcement of fishery laws, and the granting of fishery privileges are devolved to LGUs. Funding for fisheries and environmental management may be taken from the LGUs internal revenue allotment (IRA) specified by the LGC. Decentralizing planning and management to LGUs is one key to the success of MPAs given the archipelagic nature of the country and the lack of capability and resources of national government agencies to manage MPAs.

The Fisheries Code of 1998

The Fisheries Code (Republic Act 8550) provides a framework for the development, management and conservation of the country's fisheries. It reaffirms the jurisdiction of municipal and city governments over municipal waters and their important roles in enforcing fishery laws and managing coastal resources. It also provides for the establishment of closed seasons for areas with strong conservation and ecological values as well as to declare closed seasons for rare, threatened and endangered species. The Code also specifies the authority of the LGUs to prohibit or limit fishery activities in overfished areas. These provisions support MPA establishment and give LGUs the authority to declare and manage areas as MPAs.

The Fisheries Code supports local level planning of MPAs through municipal or city fisheries and aquatic resources management councils (FARMCs) in the management of municipal waters and the development of its resources. This body is composed of fisherfolk organizations, NGOs, LGUs and government agencies. The functions of this body include providing assistance in the preparation of municipal fishery development plan, recommending the enactment of municipal fishery ordinances, providing assistance in the enforcement of fishery laws, rules and regulations, and advising the LGUs on fishery issues. A similar body with similar functions, known as integrated fisheries and aquatic resources management councils (IFARMCs), can also be established in bays and gulfs. FARMCs are also empowered to recommend the creation of MPAs (i.e. fishery reserves, fish refuge and fish sanctuaries) in municipal waters. The Fisheries Code specifies that at least 15 percent of bays, foreshore lands, continental shelf or any fishing ground and habitat area may be declared as a sanctuary. No fishing is allowed in these areas. Thus, aside from supporting MPAs at the barangay or municipal levels, the Code also supports multiple sanctuaries in nearshore areas.

5. Process and experiences in marine protected area implementation

There are two basic processes for establishing a MPA in the Philippines. The most common is through community involvement at the barangay level within the context of a municipal or city government ordinance and support. The second, and much less common, is through the

⁵ Smallest political unit in the Philippines

NIPAS Act that also involves community participation but is facilitated by the national Department of Environment and Natural Resources. The two case studies below represent these two processes for establishing MPAs.

A typical MPA in the Philippines as described above has a no-take area (fish or marine sanctuary) surrounded by a limited or traditional use area (buffer zone or reserve). Successful MPAs such as Apo Island and San Salvador Island have this structure (White 1996).

The process of establishing MPAs, when done carefully over time, is usually nested in a broad community-based resource management program. This is often facilitated by an outside organization such as a local or national NGO or a local university as in the case of Silliman University and the formation of Apo Island reserve.

The establishment of a MPA is normally not the only end goal in a CRM project but is a good entry point for improving conservation and the wise use coastal resources. Achieving improved CRM through setting up MPAs always requires substantial involvement of communities with the strong support from local and sometimes national government. Thus, MPA planning and implementation normally proceeds along the path of a community-based coastal resource or fishery management process. Being the major physical manifestation of a community-based CRM initiative, MPAs often take a central role and become the main project itself with other activities taking on the sidelight.

The phases and sequence of activities undertaken to facilitate a community-based coastal resource management program with a MPA component are described in Table 4. Each phase does not occur in a rigid compartment but overlaps depending on how receptive the community and other stakeholders are and the needs and context of the area. The phases are:

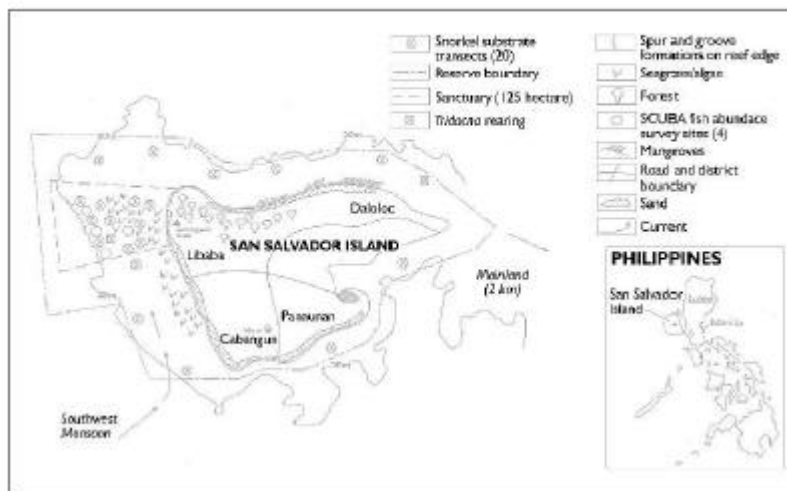
- **Preparation** involves conceptualizing the project, arranging the administrative setup of the project and hiring the needed staff.
- **Integration with the community** involves introducing the project to stakeholders and collecting baseline data.
- **Community education** refers to activities that communicate the essence and objective of the project to local stakeholders. In particular, marine ecology in general and the benefits of management are explained using formal and informal approaches to win community support.
- **Reserve establishment and management** is when a core group is formed to lead resource management activities and to spearhead reserve establishment. Community education at this stage does not cease but is continued indefinitely.
- **Strengthening and supporting activities** come after the reserve is established and some form of management is already developed, it refines management schemes, assists the community organization in their daily management activities, and broadens conservation strategies. Networking and linkage building may be strengthened.

- **Monitoring, evaluation and phase-out** prepares for the project end and turnover to the community and provides information and feedback on management.

San Salvador Island Marine Reserve and Fish Sanctuary

Located about 250 km north of Manila, San Salvador Island in the Municipality of Masinloc, Zambales is an island community known for its marine reserve and fish sanctuary (Figure 8). The island of about 380 hectares is surrounded with a relatively good coral reef. About 1,620 people reside on the island from four different linguistic groups: the Sambals, Ilocanos and Pangasinenses, and the Visayans. This linguistic heterogeneity is a result of in-migration from several provinces. The majority of the population is Sambal, native to the island. The Visayans are known as the purveyor of the island's destructive fishing activities since they allegedly introduced sodium cyanide and blast fishing to the area.

Figure 8. Map of San Salvador Island, Zambales, Luzon with marine habitat and sanctuary boundaries.



Between 1989 and 1996 the population increased 8 percent. Fishing is the major livelihood of people on San Salvador, although farming, trading, and service-related occupations are also common.

Historical changes in the coastal resources of the island came as a result of the confluence of several factors. First, Visayan migrants from the central Philippines brought destructive fishing gear and introduced aquarium fish collection using poison (sodium cyanide) in the 1970s. Second, use of destructive fishing techniques (blast fishing, use of poison and fine mesh nets) became common in the 1980s. Third, the open access nature of the resource overwhelmed the fishery with increasing pressure and destruction. Finally, there was generally a failure on the part of the national and municipal governments to curb destructive fishing practices (Katon *et al.* 1999). These factors led to the degradation of the coastal resources in the island and the reduction of coral cover to 23 percent by 1988. Catch per unit

effort (per fisher/day) declined from 20 kg in the 1960s to 1-3 kg in 1988 (Christie *et al.* 1994).

Community organizing work in San Salvador Island started in 1989 after a proposal written by a Peace Corps volunteer was funded and the Haribon Foundation, an environmental NGO, became the implementing entity. The process followed the community-based natural resource management framework outlined in Table 4.

Table 4. Phases and activities in community-based marine resource management
(Adapted from Buhat 1994).

Basis for Change	Process of change				Desired change
Preparation →	Integration with community →	Community education →	Reserve establishment and management →	Strengthening/ supporting project and replication →	Evaluation and Phaseout
Protocol	Courtesy calls	Feedback from surveys for validation and planning	Core group formation	Refinement of management schemes	Feedback of results and assessments
Collection of preliminary data	Establishment of working relationship and trust		Feedback from surveys for validation and planning	Broadening of conservation strategies	Reflection sessions
Conceptualization of project	Community integration	Continual community education via interaction and forums		Training of second-liners	Community evaluation
Project proposal preparation	Project orientation and dialogue with people	Training and seminars on leadership	Formation of sub-committees based on identified needs and tasks	Advanced training for first-liners	Agency evaluation
Tapping of resources (financial, technical and legal)	Project launching		Continual education		Long-term planning
Hiring of staff	Clarification of roles between the community and line agencies, formalization of working relation	Formal and informal presentations on ecology and environment	Formulation of management schemes	Building alliances, linkages, and networks	Formal turnover of responsibility
Training and orientation of staff	Participation in community life	Completion and validation of baseline data	Implementation of plans or projects	Other livelihood options	Modified relations between community and agency
	Collection of baseline data		Training and seminars on leadership	Extension to adjacent communities using core group	
	Identification of potential leaders		Formation of the group	Continuing outside institutional moral support	
			Updates and additions to baseline data		

Notable outcomes of the community organizing work in the island are a 127-hectare marine sanctuary, a municipal ordinance establishing the sanctuary, a resource management committee in-charge of managing the sanctuary and other resource management activities, banning of resource destructive fishing gear, and creation of a fisherfolk organization

Samahang Pangkaunlaran ng San Salvador (SPSS) or the “Development Association of San Salvador.”

An evaluation conducted by the International Center for Living Aquatic Resources Management of the project revealed that the project performance indicators before the project started and after the project ended as perceived by both members and non-members of the fisherfolk organization increased significantly (Table 5). Fisher respondents specifically registered higher perceived levels in knowledge of fisheries, information exchange, satisfaction with fishery arrangements, benefits from the marine reserve, and quickness of resolving community conflicts. This is likely to be due to the community organizing and education activities carried out by the project. Furthermore, there is no statistically significant difference in the perceived levels of all performance indicators ($p > .05$ and $p > .01$) between members and non-members of SPSS, which implies that both sectors perceived similar impacts of the project (Katon *et al.* 1999).

Table 5. Perceived pre-project to post-project changes in performance indicators (Katon *et al.* 1999).

Indicator	All			
	Today (T ₂)	Before (T ₁)	T ₂ -T ₁	P
Equity				
a. Participation in community affairs				
1. Participation in general	5.26	3.54	1.72	<0.01
2. Participation in fisheries management	4.71	3.24	1.47	<0.01
b. Influence over community affairs				
1. Influence in general	5.67	3.36	2.31	<0.01
2. Influence in fisheries management	5.95	3.40	2.55	<0.01
c. Control over fisheries	5.43	2.45	2.98	<0.01
d. Allocation of access rights	6.05	3.48	2.57	<0.01
e. Satisfaction with fishery arrangements				
1. Satisfaction-sanctuary management	6.21	3.24	2.97	<0.01
2. Satisfaction-reserve management	5.88	3.26	2.62	<0.01
3. Satisfaction-mangrove management	6.62	2.67	3.95	<0.01
f. Benefits from the marine reserve	6.31	3.17	3.14	<0.01
g. Household well-being	6.71	4.17	2.54	<0.01
h. Household income	6.38	3.52	2.86	<0.01
Efficiency				
a. Collective decision making	5.74	3.50	2.24	<0.01
b. Conflict resolution	6.48	3.40	3.08	<0.01
Sustainability				
a. Fishery well-being	7.02	4.50	2.52	<0.01
b. Compliance with rules	5.90	3.48	2.42	<0.01
c. Knowledge of fisheries	6.02	2.40	3.62	<0.01
d. Information exchange	5.86	2.62	3.24	<0.01

T₁ = 1990; T₂ = 1998; P = Probability of being random

The establishment of the fish sanctuary and marine reserve in the island has led to significant biological changes to the island's coral reef ecosystem and fishery resources. Figure 9 and Table 6 show the biological changes over time particularly with respect to live coral cover, fish yield and density, and species richness. The improvement in live coral cover may account for a portion of the increase of fish yield and fish density.

Figure 9. Temporal changes in fish density in the marine sanctuary of San Salvador Island. (Christie *et al* 1999).

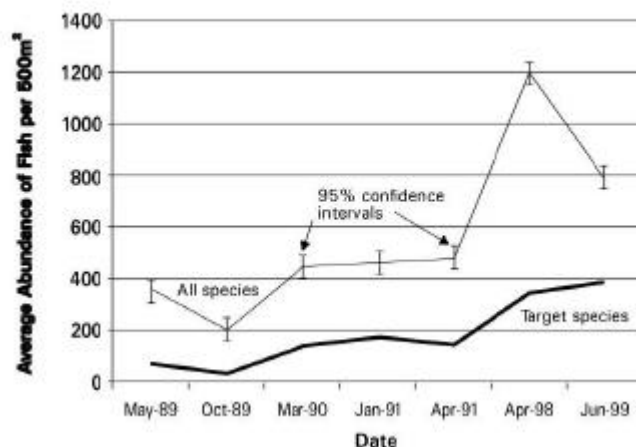


Table 6. Biological impact of MPA in San Salvador Island (Katon *et al.* 1999)

Indicator	1988 ^a	1991 ^c	1998 ^b
Live coral cover Average for the island Sanctuary area	23% 26%	No data	57% 55%
Fish yield	7 tons/km ² /yr	14 tons/km ² /yr	No data
Fish density	322 per 500 m ² (May 1989)	460 per 500 m ² (April)	1199 per 500 m ² ^c
Species richness	126 species in 19 families	No data	138 species in 28 families

^a For 1988 and 1991, data were taken from Christie and White (1994). Methods used were the snorkel transect for estimating coral cover, fish catch and monitoring for fish yield, and fish visual census.

^b Based on Garces and Dones (1998). The line intercept method was used for estimating coral cover and the fish visual census for estimating fish density and fish yield.

^c The method is not comparable to that used in earlier years.

Lessons gleaned from the experience in MPA planning and management in San Salvador are indicative of the successful community-based and local government efforts to establish MPAs in the Philippines (Christie *et al.* 1999). Important lessons are:

1. A supportive and committed leadership is essential at both the level of the fisherfolk organization and the local government unit to ensure that a MPA is sustained.

2. User rights need to be enforced in order to address resource ownership and management as well as guiding the action of resource users. Such user rights however need the support of the local government unit through moral support and law enforcement to gain legitimacy and respect by the users.
3. Legal and policy support needs to be in place. In the case of San Salvador, a municipal ordinance legitimates the rules and regulations of the sanctuary and reserve (Table 7).
4. Capability building is essential to develop skilled and capable leaders and members.
5. The participation of the community and other stakeholders is the key to the success of the MPA. Stakeholders should have a sense of ownership of the MPA so that they are eager to monitor and protect it from rule violators.
6. A clear understanding of project objectives brings about active participation among stakeholders.
7. There is a need to develop a positive attitude toward rules and collective action among community members and other stakeholders. Rules and collective action should not be seen as hindrances to effective management but as effective vehicles to attain the objectives of the MPA.
8. The MPA should show tangible outcomes such as an “observable” improvement in fish yield with a reasonable time of 2 to 3 years. For the participation of the stakeholders to be sustained, they need to feel that their investment--whether in time or financial resources--in resource management shows real results.
9. The transaction cost to establish the MPA on San Salvador was high in the beginning requiring that some form of external assistance, either through government financial support or grants from NGOs and donors, was needed. Community-based and co-management arrangements are usually “frontloaded” in the sense that a large infusion of financial resources is needed at the beginning stage of a project. With time, maintenance becomes less costly when communities are fully involved and able to take the lead role.

Table 7. Important provisions in the ordinance creating the marine sanctuary and reserve in San Salvador Island

Section 2. That it shall be unlawful for fishermen to catch fish in any form or to gather seaweeds, sand, rocks, coral or anything within the habitat for breeding and culture of marine resources (Marine Sanctuary). However, culturing and catching of marine resources for purposes of scientific research/study shall be allowed.

Section 4. That the marine habitat outside of the “Marine Sanctuary” but within the Reserve Area is called a traditional fishing area where all destructive fishing methods and uses are prohibited such as:

- a) Dynamite fishing;
- b) Muro-ami type fishing or related methods using weighted scare-lines or poles;
- c) Spearfishing using compressor or SCUBA;
- d) Cyanide or other strong poisons;
- e) Very small mesh gill nets (below 3 centimeters);
- f) Catching of aquarium fishes;
- g) Gathering of tortoise eggs; and

- h) Kunay type of fishing (a type of scare-in net)

But where the following traditional fishing methods are permitted:

- a) Hook and line;
- b) Bamboo traps (3 cm);
- c) Gill nets (3 cm);
- d) Spearing without SCUBA;
- e) Traditional gleaning and gathering of seaweeds, shells, etc.; and
- f) Catching of “padas” (small rabbitfish) during the month of September only.

Section 5. Violation of this ordinance shall be penalized as follows:

RESERVED AREA:

- First Offence: Fine of 500 pesos or one (1) week imprisonment or both fine and imprisonment at the discretion of the court.
- Second Offence: Fine of 750 pesos or two (2) weeks imprisonment or both fine and imprisonment at the discretion of the court.
- Third Offence: Fine of 1000 pesos or three (3) weeks imprisonment or both fine and imprisonment at the discretion of the court.

SANCTUARY:

- First Offence: Fine of 750 pesos or two (2) weeks imprisonment or both fine and imprisonment at the discretion of the court.
- Second Offence: Fine of 1000 pesos or three (3) weeks imprisonment or both fine and imprisonment at the discretion of the court.

Tubbataha Reef National Marine Park, Sulu Sea

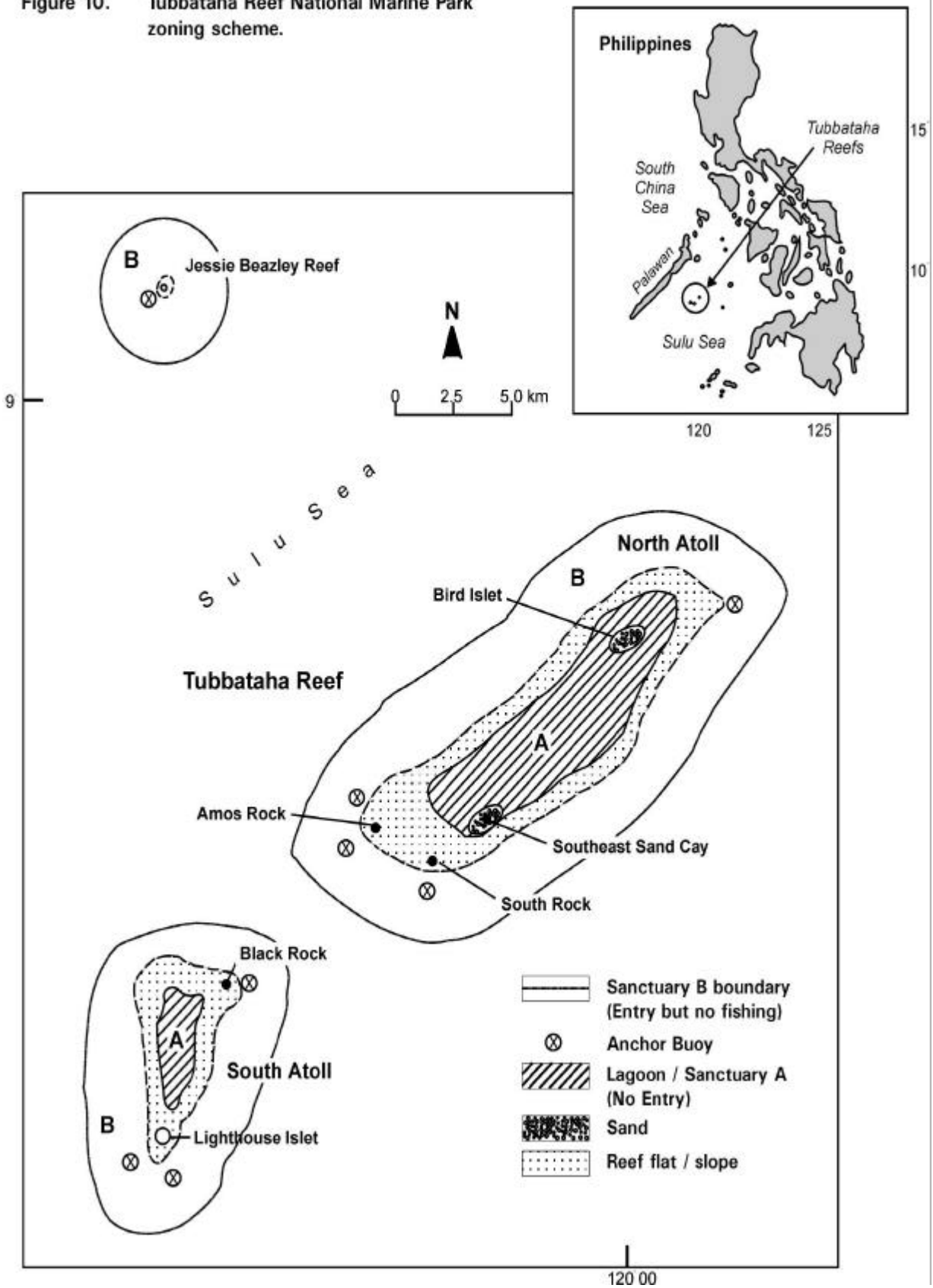
The Tubbataha Reef National Marine Park is one of few marine protected areas in the Philippines being managed under the NIPAS Act and has a functioning protected area management board (PAMB). This case study highlights the variable process under the NIPAS Act and some of difficulties of managing a remote coral reef area.

The name Tubbataha comes from two Samal words and means a long reef exposed at low tide. It is the largest coral reef atoll and the only national marine park in the Philippines. Tubbataha Reef consists of two coral atolls located in the center of the Sulu Sea, about 150 kilometers southeast of Puerto Princesa City, Palawan (Figure 10). The reef complex stretches over an area of 10,000 hectares within the island municipality of Cagayancillo, some 80 km northeast of Tubbataha. The larger north reef is about 16 km long and 4.5 km wide. The south reef is about 5 km long and 3 km wide (Arquiza and White 1999).

The reef harbors a diversity of marine life equal to or greater than any such area in the world. In one survey alone, 46 coral genera and more than 300 coral species, and at least 40 families and 379 species of fish were recorded. Large marine life such as manta rays, sea turtles, sharks, tuna, dolphins, and jackfish are often seen on or near the reef (White and Calumpong 1992; Arquiza and White 1999).

The ecological, economic and heritage benefits of Tubbataha Reef, if managed in a sustainable manner with complete maintenance of the reef habitats, are very significant.

Figure 10. Tubbataha Reef National Marine Park zoning scheme.



- Planktonic larvae from spawning fish and invertebrate animals is very prolific in Tubbataha and serves as a primary source of recruitment for coral reefs surrounding the Sulu Sea (Dolar and Alcala 1993). These larvae supply many times more fish life outside of the Marine Park area to other Sulu Sea coral reefs, than marine life that resides on the Tubbataha Reef (Arquiza and White 1999).
- Fish and other marine production from healthy and diverse reefs such as Tubbataha ranges from 20 to 35 tons per square kilometer per year based on fish yield studies from other similar reefs of less general biodiversity and habitat quality (Alcala and Russ 1990).
- Tourism to Tubbataha is increasing yearly and contributes more than \$US 2 million to the local and national economy (Arquiza and White 1999).

The biodiversity represented in Tubbataha compares favorably with the richest and most abundant marine areas in the tropical world. The preservation of this contributes immensely to the long-term maintenance of the marine species and their genetic diversity in this part of the world. And, as a United Nations Educational, Scientific and Cultural (UNESCO) World Heritage Site, Tubbataha Reef is valued by people everywhere in knowing that it exists and is maintained for the enjoyment of future generations.

Despite its remoteness, Tubbataha and its marine biodiversity are not free from intrusion and destruction. Illegal fishing methods using dynamite, sodium cyanide and other means have until recently, been destroying large areas of the reef. Anchor damage, inadvertent coral breakage from careless and inexperienced divers, collection of marine life and political conflicts also contribute to the deterioration of these reefs in the Sulu Sea. Unlike the other reef conservation areas discussed, Tubbataha has never had a resident community nearby. Rather, the closest is in the Cagayancillo Islands Municipality under which jurisdiction it comes.

Tubbataha Reef was declared a national marine park through Presidential Proclamation No. 306 on August 1, 1988. The park area includes the surrounding waters of the two atolls (33,200 hectares). On December 11, 1993, it was designated as a World Heritage Site. On July 20, 1995, President Fidel V. Ramos issued a memorandum circular creating the Task Force for Tubbataha Reef National Marine Park. The task force developed an action plan to forestall and reverse environmental degradation in Tubbataha, treating it as an integrated management unit.

Important events and supporters in the protection of Tubbataha National Marine Park after 1988 include:

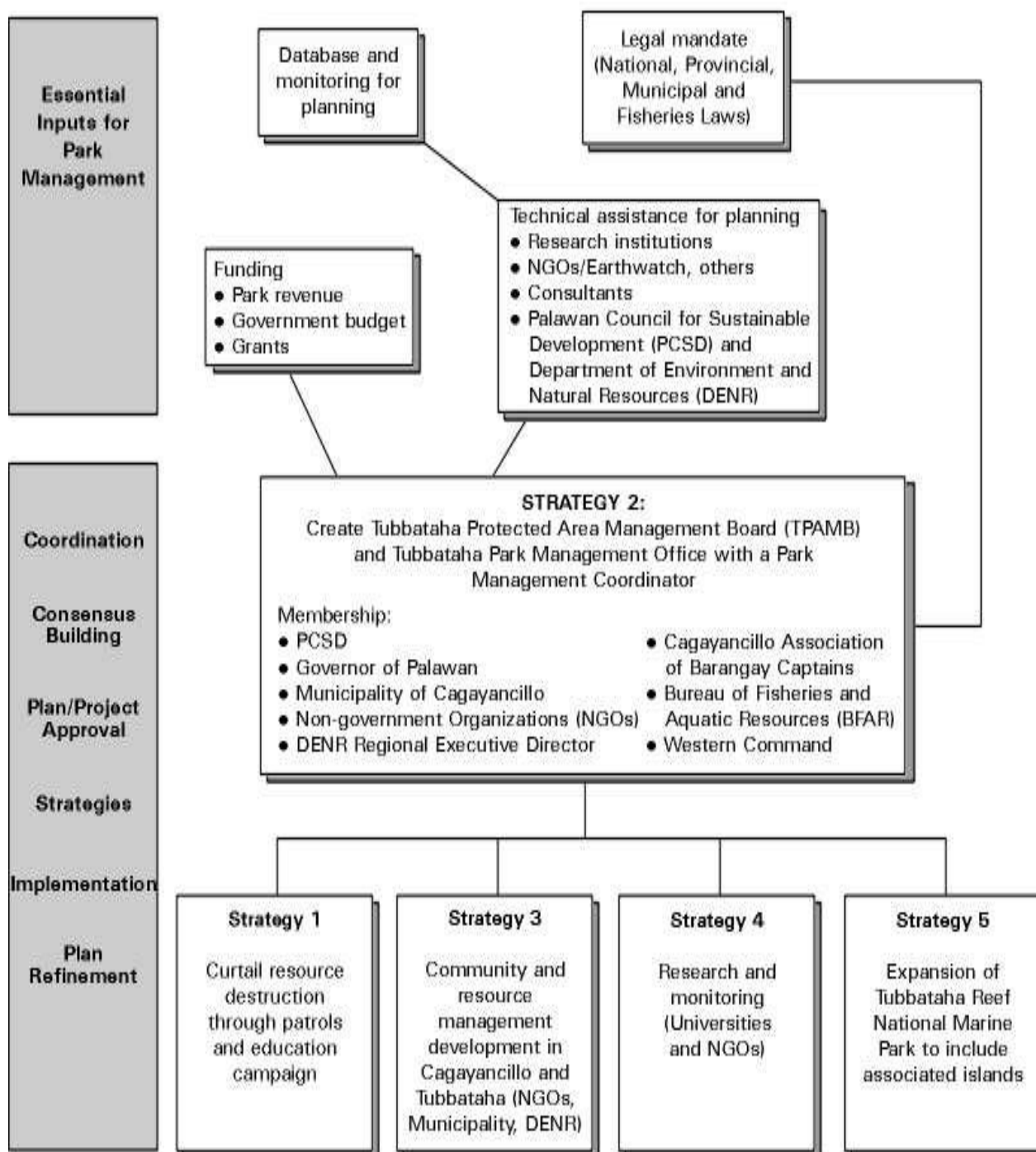
- Initiation of limited patrolling operations with support from the Dutch Government and the Foundation for Philippine Environment through the Tubbataha Foundation in 1990 and after under a Memorandum of Agreement with the Department of Environment and Natural Resources (DENR).

- Removal of an illegal seaweed farm in May 1991 with the assistance of the Province of Palawan, DENR, the Philippine Coast Guard and the Tubbataha Foundation.
- Research and monitoring activities with support from the Foundation for Philippine Environment and Earthwatch by Silliman University researchers, other individual scientists and since 1996 the World Wildlife Fund.
- Development of the Tubbataha National Marine Park Management Plan with assistance of the Marine Parks Center of Japan and the Coastal Resource Management Project (CRMP) of the United States Agency for International Development (USAID) in cooperation with the World Wildlife Fund, the DENR, the Province of Palawan, the Municipality of Cagayancillo and other stakeholders.
- Construction and installation of eight mooring buoys for diving boats to anchor on with the assistance of Government of Japan through a Palawan-based non government organization—SAGUDA.
- Continuation of patrolling operations and the construction of a small field station with support of Government of the Philippines through the Navy, DENR, SAGUDA and the World Wildlife Fund.
- Various education programs aimed at resource users in the Sulu Sea, tourists, government agencies (local and national) and others to raise the overall awareness about the need to protect this valuable and unique resource in the Sulu Sea with support from various NGOs.

With the acceptance of the Tubbataha National Marine Park Management Plan by a multi-sector body in 1998, a Protected Area Management Board (PAMB) under the NIPAS law has been created to supervise the plan implementation. Under the management board there is a park manager responsible for daily operations of an action team in the park. This field team will educate park users, and enforce laws and regulations in Tubbataha. Two patrol teams are envisioned to rotate on a regular basis to ensure effective park management. This is the proposed set of activities within the newly approved Global Environment Facility grant through the World Wildlife Fund to assist in managing the Tubbataha Park.

Currently through Navy observation, only non-exploitive activities are permitted in the park. All park visitors and scuba-dive boat crews are requested to assist in the conservation of Tubbataha by observing common sense rules about protecting the reef and its fauna. The innovative park management structure shown in Figure 11 is beginning to take effect and manage a remote and complicated natural resource area. The management scheme portrays a significant level of collaboration between the government and non-government and private tourism sectors. Only long-term institutional collaboration of this kind can possibly conserve these important reefs. One indicator of success is the reef quality that appears to be improving since 1989 when the park was declared as shown in Figure 12. Those data were collected from the identical sites using the same methods and coordinated by the same researcher beginning in 1984. Although such data is not usually available it tells a story of decline and partial recovery of the coral reef in Tubbataha.

Figure 11. Institutional structure for Tubbataha National Marine Park management.
(Arquiza and White 1999).



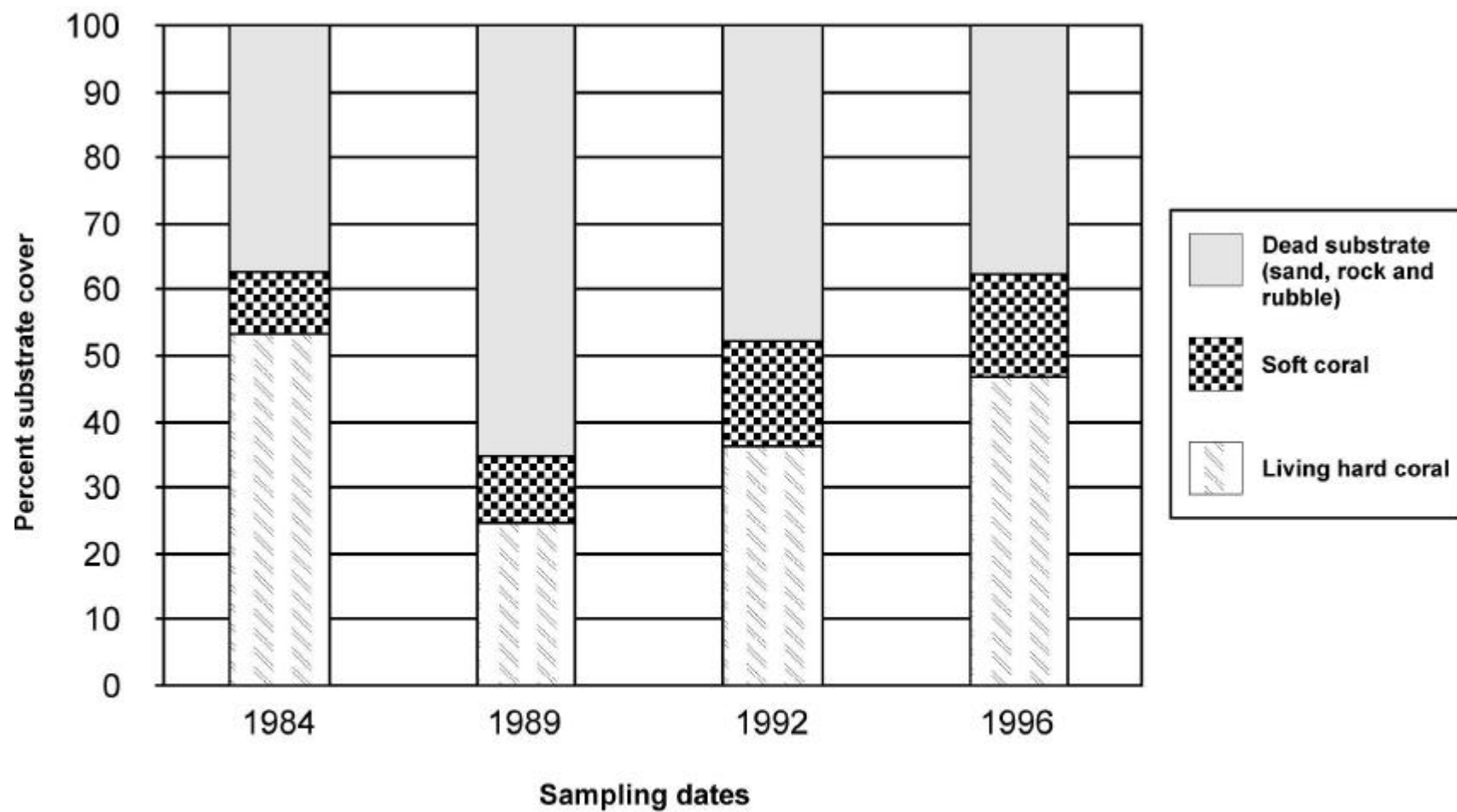


Figure 12. Mean change in substrate cover from four sampling sites, 1984 to 1996 (Arquiza and White 1999).

The full story of the decline and more recent conservation of Tubbataha Reefs is long and interesting (Arquiza and White 1999). One of its distinguishing features as compared to other areas in the Philippines is that there is little traditional community involvement in the process of planning and implementation of rules. Yet, it is an opportunity to refine our understanding of community since the stakeholder community is larger and more diverse than most other reef areas. Here, there are fishermen with interests but they came from the Visayas (Cebu, Bohol, Negros), from Panay Island, from Palawan and even from Taiwan, China. This was an unmanageable situation from the perspective of the community-based approaches discussed for San Salvador Island. Another major stakeholder is the tourism sector. Certainly the potential for scuba diving tourism is tremendous in Tubbataha but it has to be well managed to prevent damage and harnessed to help conserve the reefs. The potential for revenue generation from tourism can assist in supporting expensive management efforts. But, the bottom line for Tubbataha, unlike some other areas, is its ecological, plankton and genetic resource value. Although these values are not easy to quantify economically, they are large and essential to the healthy functioning of the Sulu Sea ecosystem. Knowledge of this ecological and economic role must stimulate support for conservation of the reefs. This requires an ongoing education program now supported by the various NGOs involved.

Lessons learned from Tubbataha Park in relation to the NIPAS Act for implementation of a MPA include:

1. The location of Tubbataha in a remote area complicates management because of the cost of patrolling and monitoring although the distance has also provided a buffer to minimize fishing effort and illegal practices in the era before the 1980s.
2. The declaration of a national marine park in which all extraction is prohibited has been a contentious issue from the perspective of recently (after 1980) claimed traditional users within the Municipality of Cagayancillo and the Province of Palawan even though historically there were few traditional users of the area.
3. Decisions about zones for park management have revolved around the feasibility of managing a remote area for fishing and non-fishing areas without adequate budget and personnel. The practical choice was to eliminate all extraction from the area.
4. Conflicting interpretation of environmental laws and a lack of appreciation and understanding of the NIPAS Act have made it difficult to set-up the protected area management board. The basic conflict has been over whether the Province of Palawan or the DENR should maintain control and chair the PAMB.
5. A lack of direct DENR support in the form of trained staff and budget delayed management planning and finalization of park management policies.
6. Selected and committed national and local NGOs are essentially responsible for the relative success of Tubbataha Park management together with a few key national government leaders that realized the need to protect an important resource.
7. The claim of traditional rights in the park can be addressed with more livelihood projects that are directly beneficial to island residents together with some provision for access to resources in the buffer area of the park.

6. Lessons from the Philippine experience with marine protected areas and coastal management

The importance of defining “Marine Protected Area” to reflect the Philippine situation

The wide adoption of MPA as a means for fishery and coastal resources management in the country heralds hope for the country's degraded coastal ecosystems and declining fisheries. However more needs to be done to make this tool effective. There is a need to clarify the definition of the term to make it less confusing. Baling (1995) noted that it is this lack of clear definition and criteria that led to the proliferation of protected areas such as tourist zones, seashore parks, and marine recreation areas that are generically considered MPAs and declared by different government agencies. Pajaro *et al.* (1999) suggested that a clear definition specifically intended to protect and conserve commercially valuable marine organisms and enhance fishing grounds be made to exclude those areas whose values are more cultural or tourism related. This is now occurring as most MPAs being declared presently in the country are for biodiversity, habitat and fisheries management with a sideline benefit being that of tourism in well managed areas.

The important role of process and participation in planning and establishing a MPA

The full process to establish an MPA that functions as planned and endures in time is not simple. The examples of San Salvador Island and Tubbataha Reef exhibit different processes but they were both rather long and intense before significant gains were made towards sustainable management of the areas. The participation of major stakeholders in the process is a key factor in success. For San Salvador, this was the fishing community and the local government. For Tubbataha, participants included the province of Palawan, the DENR, the Philippine Navy, several NGOs and the dive boat operators that visit the area as well as the fishing community and local government of Cagayancillo Islands. Community participation in coastal management is an essential outcome of the Philippine experience.

The important role of donors and civil society actors within the Philippine context

The growth of MPAs in the Philippines is partly explained by the support and interest of the multilateral and bilateral donor agencies and development organizations, and the openness of the government to this assistance. Between 1984 and 1994, at least 25 foreign development agencies and eight donor countries (Australia, Canada, Denmark, Germany, Japan, Netherlands, UK and US) supported various community-based coastal resources management projects in the country including the establishment of fish sanctuaries and marine reserves (Pomeroy and Carlos 1997). The same mix of funding sources has continuously supported MPA establishment and maintenance through various coastal resources management initiatives. For example, USAID through CRMP and ADB both have large coastal resource management initiatives that are helping establish MPAs in priority bays and municipalities to enhance fisheries management and habitat conservation. MPAs are also being initiated by a variety of NGOs as part of a broader effort to conserve coral reefs and manage fisheries. The

key lesson in all of this support is that without the full endorsement of local communities and governments to take on the long-term responsibility of management, it will come to naught.

MPA network in the Philippines is beginning to be effective but is far from complete

An extensive network of MPAs with self-sustaining core areas of a fish sanctuary (a no-take area) and a marine reserve is one key ingredient to ensure the sustainability and enhancement of the country's coastal resources. Effectively managed fish sanctuaries are the essential component in the improvement of fish yields in Apo Island and San Salvador Island MPAs. Replication of these successful projects in other coastal areas in the country through a network of MPAs with defined no-take areas will help the country's fisheries and coastal resources recover.

The proven benefits endowed by a network of no-take areas (fish sanctuaries) are varied and can help recover fishery populations. They can protect vulnerable habitats from damage by fishing gear and overfishing and increase the probability that rare and vulnerable habitats, species, and communities are able to persist (Murray *et al.* 1999). The economic benefits to coastal communities from MPAs include increasing benefits from tourism revenues in well-managed and attractive areas.

While a MPA network in the Philippines is beginning to be effective, much remains to be done to encourage more LGUs to adopt MPAs as a strategy for coastal resources management and to support their establishment. The current goal should be for every municipality in the country to reserve at least 15% of their municipal waters as MPAs. At the level of villages or communities, a national alliance⁶ of community-based MPAs has already been established to serve as a venue for sharing of experiences and learning among MPA implementers. Continued support to this community-based effort would help ensure that fishing communities are active participants in maintaining their environment.

Financing MPAs is becoming more creative and local governments are playing a larger role

Ensuring the financial stability of MPAs when external support (e.g. donor assistance) declines is crucial to their sustainability. Although many and various forms of MPAs have been established, (more than 400) only a few are well maintained after external support ended. Currently, most, if not all, of the existing on-going initiatives on protected areas, in general, and MPAs, in particular, are being financed through multilateral or bilateral grants. A study on transaction cost in San Salvador Island (Kuperan *et al.* 1999) has shown that a community-based co-management arrangement of MPA demands high financial input at the start of the project when community participation is low and needs to be facilitated. However, the transaction cost diminishes when communities and other stakeholders are already involved and some form of organization is functional and respect to rules and regulations is achieved. Ensuring that the management process is continued by local governments and

⁶ The alliance is called PAMANA (*Pambansang Alyansa ng mga Maliliit na Mangangisda na Nangangalaga ng Karagatan at Sanktuaryo sa Pilipinas* or the National Alliance of Small Fisherfolks and Sanctuaries in the Philippines).

communities is not trivial, and is often in doubt as MPA projects end. This is why local municipal governments must play a key role from the beginning so they know what to do.

In the case of NIPAS, the law provides for the establishment of an Integrated Protected Areas Fund. The fund will be used to finance the protection, maintenance, administration, and management of NIPAS if it becomes functional.

Experiments on how to make conservation pay for itself are currently underway. Eco-tourism is being encouraged in protected areas to generate the necessary funding to support conservation. Creation of livelihoods that support conservation is a mechanism that needs further research. Introducing user fees into the MPA management framework for entry to coral reefs and use of facilities is starting to work. It has been shown that divers in three major diving areas in the Philippines are willing to pay to enter a marine sanctuary or donate for the maintenance of anchor buoys (Arin 1997; Vogt 1997). The PAMB for Tubbataha has just started collecting a US\$ 50 entrance fee from every scuba diver going there.

Local government units have also developed mechanisms to support their initiatives on MPAs through the allocation of a certain percentage of their internal revenue allotment for resource management activities as mandated in the Local Government Code. Some LGUs are regularly allocating budget from various sources to undertake coastal resource management activities

MPAs in the context of integrated coastal management programs

An emerging trend in the Philippines within local and national governments is to encourage the development of integrated coastal management (ICM) plans and programs. These can cover the entire coastline of a municipal government or include an entire bay with more than one municipal unit. These plans cover such activities as shoreline land use and development activities, fisheries regulations and management, mangrove management, law enforcement teams, zoning municipal and nearshore waters for various uses and almost always include one or more MPAs. These ICM plans are an important advancement in thinking and planning in a more holistic manner than in the past. Within such plans, MPAs can be located in strategic locations to maximize their benefits to the local and downstream sites of concern.

6. Conclusion

In summary, 25 years of community and cooperative-based coastal conservation through various forms of marine protected areas have shown that effective coastal resource management is more than a problem of simple environmental education or law enforcement. Approaches that mobilize those people who use the resources daily are necessary to insure wide participation and potentially long-lasting results (Wells and White 1995). Strictly legal approaches have had few successes in the Philippines. Equally, good environmental surveys and information have not been sufficient to bring about rational use of marine resources without being fully integrated into the long-term process of integrated planning and implementation within the context of well-articulated marine protected areas. Combining community participation, environmental education, economic incentives and legal mandates in a manner appropriate for a particular site together with long-term institutional support from

government, non-government groups, academe or other institutions offers some possibility of success.

In reality, the support from government is often lacking and not sustainable. Thus the importance of showing the potential economic gains and losses from improved or worsening management situations is critical. Monetary returns from good investments in resource management make good sense to the poorest fisher and the loftiest policy maker. Thus to turn the tide on coastal resource degradation we need: education, community and government participation and co-operation between all organizations involved in resource management linked directly to the economic benefits from management. Only then will knowledge of economic returns fully motivate people into action as we are seeing in the Philippines today through the various management options discussed in this paper.

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